How did state-owned banks respond to privatization? Evidence from the Indian experiment

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Abstract

The paper examines the response of banks to privatization. Using data on all state-owned banks for the period 1990-2006, the findings indicate that fully state-owned banks are significantly less profitable than partially privatized ones. The improvements in performance by partially privatized banks are, in fact, sustained after privatization. In addition, the analysis indicates that privatization improves profitability, efficiency and improves bank soundness, while lowering bank risk. While the improvement in bank risk is typically spread out over a much longer period, the progress in terms of profitability and economic efficiency typically occurs in the post-privatization period.

Key words: banking, partial privatization, non-performing loans, capital adequacy ratio, India

JEL classification: G21, C33, P20

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1 Introduction

Privatization of public enterprises has generated much debate in developing countries which had previously opted for planning as a strategy of development. Under the Five Year Plans, the Indian state took upon itself the responsibility to undertake investments in basic and strategic economic activities and control and direct the private sector through a network of regulatory institutions. After pursuance of planned development for nearly half a century, a stage was reached when questions were raised about the relevance of the planned development strategy (see, for instance, Kochhar *et al*, 2006). After a period of debate and discussion, the process was reflected in a gradual lowering of the share of the government in state-owned enterprises, although the state retained ownership control, a process alternately referred to as 'divestment' or 'partial privatization' (Gupta, 2005).

Another important aspect of the privatization process has been the gradual scaling down of government ownership in state-owned banks (SOBs). In a cross-country study, La Porta *et al*. (2002) found that 42% of equity of top ten banks was government-owned in an average country. Such government ownership of banks has been empirically found to be detrimental to growth (Shleifer and Vishny, 1994; La Porta *et al*., 2002). Widespread privatization in recent decades has generated a large empirical literature concerning the effect of ownership on firm performance. Barth *et al*. (2001) provide empirical evidence which suggests that government ownership of banks is associated with a low level of financial development. Beck and Levine (2002) fail to discern any positive effect of government ownership of banks on economic growth. The negative effect on development is not the only cost of government ownership of banks. Caprio and Martinez Peria (2000) show that higher state-ownership of banks is associated with higher spread, lower lendable resources and reduced stock market activity. These effects are often likely to persist because banking is one of the very few sectors where privatization has made limited inroads around the world (Megginson and Netter, 2001).

In this paper, we report evidence on the performance of fully government-owned (FGO) and partially government-owned (PGO) banking firms, focusing on India as a case study. More specifically, we address three sets of questions. First, is there any evidence to suggest performance differentials between PGO and FGO banks? Accordingly, we examine not only the quantum, but also the static and selection effects associated with privatization. Second, the privatization of banks occurred at different time points over the sample period. It, therefore, remains an open question as to whether the benefits of privatization are sustained over a period of time, an aspect we address in the study Third, do banks report artificially inflated earnings prior to privatization?

The recent economic crisis has led policymakers to reassess the role of the state *vis-à-vis* the market, especially in the financial services industry. Leading banks and mortgage lenders across countries have been brought under state ownership (Bernanke, 2009). This has been buttressed with increase in quantum of deposits guaranteed. In the US, several leading banks,

which had received substantial capital infusions from the governments during the heydays of the crisis, have since returned a significant portion of the resources back to the exchequer.

In contrast to the privatization experiences of several other countries, the privatization in the Indian case was "partial" in the sense that ownership of the bank was broad-based through sale of minority equity stake, but the control still remained with the government.[2] Therefore, unlike the case of full privatization where both ownership and control shift to the private sector, in this case, the shares are traded on the stock exchange, while the firm remains under government control. Because of this intermediate position between full state ownership and complete private shareholding, it is able to provide useful insights into the relative benefits of the political *versus* managerial view in impacting firm performance.

India offers a reasonable laboratory among emerging markets to examine this aspect in a comprehensive fashion. First, India is one of the largest and fastest growing developing countries with a rich history of banking sector controls (Demetriades and Luintel, 1996). These controls have gradually been relaxed, enabling a greater role for market forces in resource allocation by banks. Second, India is one of the few emerging economies for which a comprehensive and reliable database of SOBs is available over an extended time span, permitting rigorous statistical analysis.

To examine this issue, the paper exploits relevant banking data for 1990-2006 to ascertain the impact of partial privatization on the performance of state-owned banks. The findings indicate that a lowering of government holding improves bank performance, judged in terms of alternate privatization measures employed.

The remainder of the paper continues as follows. A brief overview of the evolving literature in this area is reviewed in what follows. The data and methodology is detailed thereafter followed by a discussion of the results. The final section concludes.

2 Literature

Private ownership of firms is considered to promote efficiency. The *political view* argues that the political interference can distort the objectives and constraints faced by managers and thereby, the transfer of management control to private owners is likely to address the attendant inefficiencies in state-owned enterprises (Shleifer and Vishny, 1994). The *managerial view*, on the other hand, contends that privatization improves performance because state-owned firms have difficulty monitoring managers (Laffont and Tirole, 1993). Widespread privatization in recent decades has generated a large empirical literature concerning the effect of ownership on firm performance. Partial privatization - where the government remains the controlling owner - is of particular empirical interest because of the insight it offers into the long-standing debate over why state-owned firms perform poorly.

It has been argued that the greater the dispersion in the equity ownership of the firm, the higher the incentives for the owners to free ride on each other's efforts to monitor the management of the firm. As Crama *et al.* (2003) observe, this effect in turn, is compounded by two factors. First, since the nature of main holders varies across countries, the ability to exert

[2] Boubakri *et al.* (2005, 2008) refers to this process as *revenue privatization*.

control could differ across shareholder categories. The second is the complexity of ownership structures across countries. To address the attendant agency costs, mechanisms have been developed in most countries to segregate ownership ("cash flow rights") and control ("voting rights"). Empirical evidence presented by Crama *et al* (2003) indicates that, when control over the management of a corporation is divided among important shareholders, the best strategy is to agree on maximizing profits rather than fight over complex objectives often associated with public control or with control in the hands of one single party. This could especially be relevant in developing economies where inadequacies in the financial system – underdeveloped capital markets, weak bankruptcy procedures and the associated legal deficiencies – are quite commonplace (Caves, 1990; Adam *et al*., 1992).

In the Indian context, studies have primarily focused on effect of deregulation and liberalization on bank efficiency (Bhattacharya *et al*., 1997; Sarkar and Kumbhakar, 2003), focusing, in particular, whether and to what extent, the liberalization of financial sector, exerted any perceptible influence on efficiency (see Mohan, 2006 for a review). This needs to be viewed in conjunction with the differential ownership profile of banks. Early studies (Sarkar *et al.,* 1998) found weak evidence to suggest that ownership was an important determinant of performance. More recent research report differences in efficiency of Indian commercial banks with across ownership, size and asset quality (Das and Ghosh, 2009).

The study which comes closest to the spirit of the present paper is Gupta (2005). Using data on non-financial firms for 1990-2000, the analysis examines the effect of partial privatization on performance. The analysis reveals that privatization leads to performance improvements. Although there are certain similarities between the present study and Gupta (2005), there are also important differences. First and foremost, unlike Gupta (2005), which focuses on non-financial firms, we examine this issue in case of banking firms. Second and as an upshot of the previous point, the variables of interest are significantly different across the two sets of studies. We explore, in addition to the impact of equity dilution, the static and selection effects associated with privatization. Contextually, we also examine the channels through which performance improved in these banks, an under-researched aspect in most studies on bank privatization. We study the time frame over which privatization benefits accrue to banks, an aspect not addressed in Gupta (2005).

3 Indian banking system: An overview

The Indian banking system is characterized by a large number of banks with mixed ownership.[3] The commercial banking segment presently comprises of 28 SOBs in which government has majority equity stake, 29 private sector banks, including 8 *de novo* private banks and 30 foreign banks. Total bank assets constituted around 80% of GDP in 2005-06. State-owned banks had a 72% share in the assets of the banking system in 2006, while private and

[3]The banking system in India comprises of commercial and co-operative banks, of which the former accounts for 95% of banking system assets. The commercial banks, in turn, comprise of the 27 state-owned banks (SOBs). These banks account for, on average, around 75% of commercial banking assets. An erstwhile *de novo* private bank was amalgamated with its state-owned development counterpart to create a new state-owned bank in 2005, taking the number of SOBs to 28. In addition, there are the old private banks (operative prior to economic reforms), the *de novo* private banks (established post reforms beginning 1994-95) and the foreign banks.

foreign banks constituted the remaining. In 1990, state-owned banks' share in total banking system assets was a little over 90%.

Prior to the initiation of financial sector reforms in 1992, the Indian financial system essentially catered to the needs of planned development where the government sector had a predominant role in every sphere of economic activity. The pre-emption of a large proportion of bank deposits in the form of reserves and an administered interest rate regime resulted in high cost and low quality financial intermediation. The system of administered interest rates was characterized by detailed regulatory prescriptions on lending and deposit, leading to a multiplicity of interest rates. As a result, the spreads between deposit and lending rates of commercial banks increased, while the administered lending rates did not factor in credit risk. The lack of recognition of the importance of transparency, accountability and prudential norms in the operations of the banking system led also to a rising burden of non-performing assets. On the expenditure front, inflexibility in licensing of branches and management structures constrained the operational independence and functional autonomy of banks and raised overhead costs.

The period 1992-97 laid the foundations for reforms in the banking system. It saw the implementation of prudential norms pertaining to capital adequacy, income recognition, asset classification, provisioning and exposure norms. While these reforms were being implemented, the world economy also witnessed significant changes, 'coinciding with the movement towards global integration of financial services' (Government of India, 1998). Against such backdrop, a second government-appointed Committee on banking sector reforms provided the blueprint for the current reform process (Government of India, 1998).

Significant reforms in the financial system during the reform period included several measures (Reddy, 2006; Nachane *et al*., 2007; Chairlone and Ghosh, 2009):

(a) Lowering of statutory reserve requirements;
(b) Liberalizing the interest rate regime, allowing banks the freedom to choose their deposit and lending rates.
(c) Infusing competition by allowing more liberal entry of foreign banks and permitting the establishment of *de novo* private banks.
(d) Introducing micro-prudential measures (capital adequacy requirements, income recognition, asset classification and provisioning norms for loans, exposure norms, accounting norms).

As a consequence of the reforms, the share of state-owned banks in total assets of the banking system has declined by roughly one percent per annum over the reform period (Table 1).

[Table 1 about here]

An important aspect of the reforms process was the process of partial privatization of state-owned banks. The rationale for such privatization was elucidated in an influential report published by the Indian government (Government of India, 1991, 1998). It was argued that state-owned banks should be encouraged to access the market to raise capital. This would serve a two-fold purpose. First, it would engender discipline in performance which would enhance shareholder value. Second, it would improve corporate governance in view of the responsibility cast on managements to manage their institutions through improvements in productivity and

efficiency. Accessing the market was the most practical way of augmenting capital, since an increase in net worth through internal accruals may not suffice to meet these needs.

The privatization process in India was initiated in the early 1990s as part of its process of financial sector reforms. Accordingly, beginning 1993-94, the relevant banking Acts were amended to enhance the scope for partial private shareholding. Over the period 1994-2006, 19 state-owned banks accessed the equity market, with several banks accessing the market with a follow-on offer and raised around Rs.196 billion (≈US$ 4.8 billion); the government shareholding in the divested banks range from 51.1-76.8% (RBI, 2006).

4 Data and methods

Bank-wise data for the period beginning 1990, two years prior to the inception of financial sector reforms through 2006 are culled from the various issues of *Report on Trend and Progress of Banking in India* (RBI, various years, a) and *Statistical Tables Relating to Banks in India* (RBI, various years, b), two yearly publications of the RBI which provides the annual audited figures on the balance sheet and profit and loss accounts and prudential ratios of individual banks, the highest frequency with which the data on the relevant variables are available on a consistent basis. The data has the advantage of being perfectly comparable across institutions, both before and after privatizations, as the central bank acting as regulator of the financial system requires the financial entities to present their balance sheets with the same accounts and criteria. Data on bank-level employment and number of branches are extracted from *Performance Highlights of Banks*, a yearly publication of Indian Banks' Association (IBA, various years), the self-regulatory body of Indian banks.[4] These banks, on average, accounted for nearly 80% of total banking sector assets over the reporting period. Finally, data on the macroeconomic and monetary variables are extracted from the *Handbook of Statistics on Indian Economy* (RBI, 2006), an annual publication of the RBI which provides time-series data on macroeconomic and monetary variables.

Following Boubakri *et al.* (2005), we employ four measures of performance: return on assets (RoA) as the profitability measure, net interest margin (NIM) as the measure of economic efficiency, non-performing loans to total loan ratio (NPL) as the measure of bank risk and capital adequacy ratio (CAR) as the bank soundness measure.

Borrowing from the literature on the modalities of enterprise restructuring (Grosfeld and Roland, 1995), we disaggregate restructuring as actions along four dimensions: employment (labor shedding); internal organization (branch rationalization, lower proportion of investment in government securities); operating efficiency and improved market discipline.

We also include external environment factors, such as fiscal deficit to GDP ratio (fiscal), private investment to GDP (investment) and the foreign bank asset share in total banking assets (foreign). Finally, we control for the business cycle and the stance of monetary policy. To moderate the influence of noise, instead of the continuous variables – GDPGR and RIR – we employ dummy variables.

[4] The financial year for banks runs from first day of April of a given year to the last day of March of the subsequent year. Accordingly, the year 1992 corresponds to the period 1991-92 (April-March) and so on, for the other years.

The primary concern of the study is to ascertain the effect of privatization on bank performance. Towards this end, we employ four explanatory variables to decompose the causes and effects of privatization. The first variable is *PGO1*, a dummy variable that equals one throughout the whole sample for banks that were privatized at some point during the sample period. To the extent that relatively strong banks were privatized, we expect it to have a positive coefficient. The second is *PGO2*, a dummy variable that equals one from the year a bank is privatized. While *PGO1* controls for any selection effects associated with privatization, *PGO2* measures the effect of the privatization itself. The third variable following Boubakri *et al.* (2005) is *PGO3* is equal to the number of years since the year of privatization. While *PGO2* is included to capture the immediate effects of privatization, *PGO3* captures the average yearly performance trend in the wake of privatization. The final variable *PGO4* is the fraction of equity divested by the government in the concerned bank, akin to Gupta (2005).

5 Results and discussion

5.1 Univariate results

Table 2 reports comparisons of profitability, efficiency, bank soundness and risk measures for the state-owned banks. The results show a clear tendency for FGO banks to be less profitable than PGO ones. The differences in profitability appear to be economically important. For example, the average return on asset for PGO banks is 0.003, which far exceeds that of FGO banks. The difference is statistically significant at the 0.05 level.

[Table 2 about here]

The results on bank risk and soundness are also equally striking. FGO banks have statistically significant higher average NPLs and lower CAR than PGO banks. Similarly, FGO banks exhibit NIM which is much lower than PGO banks, although the evidence on this count is less compelling.

5.2 Multivariate regressions

The univariate tests do not control for factors that might systematically impact bank performance. For one, we do not account for observable bank-level controls. Besides, the banking industry level factors are not taken on board. As well, the pace of economic activity and the stance of monetary policy could also be important considerations.

We control for these factors in a multivariate regression framework. The regression model for bank *j* at time *t* is specified as:[5]

$$Perf_{jt} = \varphi_i + \varphi_1 \,\mathrm{Pr}\, ivatization\,(dummy\ or\ fraction)_{jt} + \varphi_2\, B_{jt} + \varphi_3\, Z_t + \varphi_4\, M_t + \varepsilon_{jt} \qquad \textbf{(1)}$$

In (1), the concerned performance variable (*Perf*) is assumed to be a function of bank-level controls (*B*), time-varying banking industry specific variables (*Z*), including foreign banks asset share and macroeconomic variables (*M*), such as real GDP growth and interest rate. φ_i is

[5]To examine the effect of the quantum of divestment on performance, we include *PGO4* for each bank in a given year, instead of the dummy variable.

the bank fixed effect and ε is the error term. The coefficient of interest is φ_1: its sign and significance determines the effect of privatization on the dependent variable.[6]

The inclusion of lagged dependent variable (LDV) renders static panel estimation of (1) inconsistent. As a consequence, we resort to the Generalized Method of Moments (GMM) estimator to obtain consistent estimates of the above model (Arellano and Bond, 1991). Such panel data techniques enables to control for potential endogeneity of privatization and the persistence in performance measures. Following Arellano and Bond (1991), the two-step GMM estimator is applied for inference on model specification. Specifically, with respect to the validity of instruments, we conduct a Sargan test for the null hypothesis that the over-identifying restrictions are valid. We use the lags of all variables (in levels) from the second lag as instruments.

The results, reported in Table 3, show that we are not able to reject the Sargan test. Moreover, we are not able to reject the null hypothesis of no second-order serial correlation. In other words, this suggests that the GMM model is well specified.

In Table 4, across all specifications, the lagged dependent variable is positive and highly significant, which is supportive of a persistence effect. More importantly, the evidence clearly indicates that relatively strong banks were chosen for privatization. The coefficient on *PGO1* is positive and significant in the *RoA* regression, with a point estimate equal to 0.0008. The result is significant at the 0.10 level (t = 1.68). Likewise, the coefficient on *PGO1* is positive and significant in the *NIM* and *CAR* regressions as well. This suggests that profitable banks, with high net interest margins and capital adequacy ratios were selected for partial privatization.

[Table 3 about here]

Turning to the channels of performance improvement, the evidence indicates that profitability improvements were driven by workforce rationalization (negative coefficient on *asset/employee*) and containment in operating expenses (negative coefficient on *Op.expn)*. Privatization led to containment in interest expense through improvements in market discipline (negative coefficient on *deposit rate*) by listing on stock exchanges. Likewise, *CAR* increases were driven by banks 'over-investment' in government securities: in a period of lackluster industrial demand and declining interest rates, significant investments in government paper led to improved treasury income, boosting profits and thereby, *CAR*. This perhaps also explains the positive sign on *G-Secs* in the *RoA* equation. The coefficient on *branch* is not unambiguous. On the one hand, bigger branch network enabled banks to mobilize (and deploy) low-cost deposits; on the other, this also led to higher *NPLs*, perhaps because of inadequate credit evaluation skills, especially in non-urban locales.

Among the controls, the coefficient on *size* is negative in the *RoA* and *NIM* specification, reflecting a gradual squeezing of bank spreads and along with, profitability, consequent upon an increase in size of bank operations. The coefficient on *foreign* indicates that greater presence of foreign banks erodes profitability and margins, while raising NPLs. This concurs with the 'cherry

[6] The raw correlation between PGO1 and PGO2, PGO1 and PGO3 and between PGO2 and PGO3 are, respectively, 0.48, 0.38 and 0.79. All of these are significant at the 0.01 level. In view of this, we include the privatization variables sequentially in the regression specifications.

picking' hypothesis which suggests that foreign banks specialize in servicing good credit risks, leaving state-owned banks with less creditworthy borrowers, increasing the overall riskiness of their loan portfolio.

In the final set of models, we include *PGO4* among the regressors. The results clearly suggest an increase in divestment raises profitability. Thus, not only does partial privatization generate a sustained improvement in bank performance, these improvements are enhanced at higher levels of divestment. By way of example, in the *RoA* equation, raising privatization from 0 to 49% is associated with a profitability increase by nearly 0.3 per cent (49 *x* 0.006). Not only profitability, but also bank risk and soundness witness improvement, post privatization. In the *NPL* equation, the point estimate on *PGO4* is -0.066, suggesting that partially privatized banks have lower delinquent loans, presumably owing to their improved flexibility in credit extension and risk management practices. Consistent with univariate results, privatized banks also exhibit higher capital adequacy ratios. All of these coefficients are statistically significant at conventional levels.

5.3 Pre- vs. post-privatization

The earlier analysis highlights that not only profitability, but also bank risk and soundness exhibit improvements consequent upon partial privatization. It does not, however, explore the time frame over which such benefits accrue to these banks. To examine this aspect, table 4 presents the results of tests for changes in bank performance variables around the time when banks were privatized. Two sets of results are reported. In one set, average levels over the two years following privatization are compared with the average levels over the three years before privatization. In the other set, average levels over the three years following privatization are compared to average levels five years pre-privatization.

[Table 4 about here]

The short and long period comparisons yield broadly similar results. *RoA* increases and *NPLs* decline after privatization. Using either the short or long comparisons periods, these increases are significant. In contrast, increases in *CAR* after privatization are statistically significant only in the shorter period.

The evidence in table 6 supports the view that privatization should raise profitability and lower sticky loans. These tests, however, do not control for the general level of economic activity before and after privatization. They are therefore, not capable of distinguishing between changes in firm attributes arising from ordinary fluctuations in economic activity and those driven by changes in ownership.

Taking this process forward, we perform a series of multivariate regressions that enable us to detect changes in firm attributes occurring before privatization, while controlling for the economic environment. Accordingly, we include three indicator variables. The variable *PRE* equals one if the observation is one or three years before the year of privatization, else zero. The *Year 0* variable equals one if the observation is for the year in which privatization occurs and zero, otherwise. Finally, the variable *POST* equals one if the observation is for one to two years after the year of privatization, zero otherwise. Finally, akin to our baseline regressions, we include the set of bank-level controls, including those for the economic environment.

[Table 5 about here]

As Table 5 indicates, neither profitability nor economic efficiency exhibits a perceptible increase before privatization. The coefficients on *PRE* are insignificant in *RoA* and *NIM* specifications. The evidence is, however, quite different when *CAR* is the dependent variable. Consider the *CAR* regression that does not include *PGO4* among the regressors. The coefficient on *POST* is significantly positive and exceeds the coefficient of *PRE*. The differences between the coefficients of *PRE* and *POST* are, in fact, statistically significant. This indicates that improvements in *CAR* are reliably higher after privatization than during one to three years prior to privatization.

The table also provides direct evidence on the relationship between private shareholding and performance. For all the regressions that include *PGO4*, the coefficient on this variable is significant and meaningful in three out of four specifications. This means that profitability and economic efficiency are higher when private shareholding is high (or alternately, government ownership is low). For example, the 0.029 coefficient on *PGO4* in the *RoA* regression implies that a rise in private shareholding to 49% is associated with a 1.4% increase in *RoA* (49 *x* 0.029). Likewise, NPLs drop by 6.6% (49 *x* -0.134) consequent upon the rise in partial private shareholding. Hence, the overall evidence suggests that bank performance - judged in terms of profitability and bank risk - is enhanced consequent upon a lowering of government shareholding.

6 Summary and conclusions

The partial privatization program in India, undertaken as part of the overall process of financial sector reforms, since the early 1990s, was aimed at improving the performance of state-owned banks. While there have been several studies on bank performance, most studies of this genre have primarily focused on the efficiency versus ownership debate, with limited attention being paid to the impact of partial privatization on bank performance. With the government retaining management ownership even after privatization, the implication of such partial privatization on performance remains an open question.

In this context, the present study employs advanced panel data techniques to explore the performance of state-owned banks since the 1990s that encompasses the partial privatization program. We focus on several aspects of banks performance: profitability, efficiency, risk and soundness. The analysis indicates that FGO banks are significantly less profitable than PGO ones. This result is quite robust. It is apparent in simple univariate comparisons as well as in multivariate regressions that control for bank size and other financial ratios as well as the business cycle and monetary policy stance. Thus, the evidence tends to confirm the findings of Boardman and Vining (1989).

The evidence strongly suggests that privatization improves bank efficiency and soundness, while lowering bank risk. While the improvements in bank risk are typically spread out over a much longer period, the progress in terms of efficiency occurs in the post-privatization period. We broadly confirm the results of Megginson *et al*. (1994) who report significant increases in return on assets during the three years after privatization.

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Table 1. Summary of the Banking Industry: 1989-90 to 2005-06 (Rs. billion)

Year / Bank Group	1989-90			1996-97			2005-06		
	SOB	Private	Foreign	SOB	Private	Foreign	SOB	Private	Foreign
No. of banks	28	24	19	27	34	42	28	29	30
Total asset	2580	99	129	5563	606	561	20148	5650	2016
Total deposit	1840	78	70	4493	498	373	16225	4233	1138
Total credit	1102	42	45	2202	281	265	11063	3096	976
Credit-deposit ratio	0.60	0.54	0.64	0.49	0.56	0.71	0.68	0.73	0.86
Share (in per cent)									
Total asset	92	4	4	83	9	8	72	20	8
Total deposit	92	4	4	84	9	7	75	20	5
Total credit	93	4	3	80	10	10	73	20	7
Total income	206	8.8	12	536	74	76	1609	436	174
of which: interest income	187	7.9	9.9	465	64	62	1376	345	122
Total expenditure	201	8.5	10.4	540	61	56	1218	329	108
of which: interest expenses	142	5.3	6.6	309	31.7	32	802	214	51
Net profit	5.0	0.3	1.6	71	13	20	160	50	31
Bank asset/GDP		57.8			49.2			78.8	

SOB: State-owned banks; Private: Private sector banks; Foreign: Foreign banks

Table 2. Univariate tests: PGO vs. FGO banks

Variable	PGO	Observations	FGO	Observations	*t*-statistic for difference
RoA	0.003	299 (19)	-0.0001	144 (9)	1.937**
NIM	0.032	299 (19)	0.031	144 (9)	1.423
NPL	0.129	245 (19)	0.157	117 (9)	-2.077**
CAR	0.107	263 (19)	0.089	126 (9)	2.149**

***, ** and * denote statistical significance at 1, 5 and 10%, respectively
Number of banks within parentheses

Table 3. Relative performance of PGO banks

LDV	0.424 (0.016)***		0.113 (0.024)***	0.112 (0.025)***	0.644 (0.044)***	0.829 (0.056)***	0.127 (0.013)***	0.129 (0.012)***
PGO1	0.0008 (0.0005)*		0.0007 (0.0001)***		-0.010 (0.001)***		0.001 (0.0006)**	
PGO4		0.006 (0.003)*		0.004 (0.002)*		-0.066 (0.022)***		0.025 (0.010)***
Channels								
Asset/ employee	-0.001 (0.0004)***	-0.001 (0.0005)***						
Credit growth					-0.032 (0.005)***	-0.029 (0.005)***		
Op. expn.	-0.895 (0.114)***	-0.888 (0.119)***					0.139 (0.037)***	0.816 (0.277)***
Dep. Rt			-0.009 (0.002)***	-0.009 (0.002)***				
Branch	0.041 (0.022)*	0.039 (0.023)*	0.029 (0.008)***	0.031 (0.006)***	0.168 (0.056)***	0.166 (0.061)***	0.037 (0.016)**	0.031 (0.017)*
G-Secs	0.026 (0.009)***	0.025 (0.009)***	-0.022 (0.005)***	-0.023 (0.004)***	-0.002 (0.026)	-0.013 (0.031)	0.050 (0.016)***	0.047 (0.016)***
Macro	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Size	-0.026 (0.005)***	-0.023 (0.005)***	-0.055 (0.005)***	-0.056 (0.005)***	0.035 (0.037)	0.013 (0.044)	0.154 (0.012)***	0.128 (0.012)***
m1	-2.23 (0.02)**	-2.22 (0.02)**	-1.38 (0.16)	-1.25 (0.21)	-2.87 (0.00)***	-3.36 (0.00)***	-2.41 (0.01)***	-2.44 (0.01)***
m2	1.00 (0.31)	0.93 (0.35)	-0.52 (0.60)	-0.58 (0.56)	1.23 (0.21)	0.59 (0.55)	-0.82 (0.41)	-0.81 (0.41)
Sargan test (p-value)	25.07 (0.51)	25.26 (0.50)	26.26 (0.44)	26.07 (0.45)	20.30 (0.43)	19.07 (0.51)	18.05 (0.70)	18.18 (0.69)
Period, banks	1990-2006, 28	1990-2006, 28	1990-2006, 28	1990-2006, 28	1990-200, 28	1990-2006, 28	1990-2006, 28	1990-2006, 28
N.Obs	380	380	387	387	306	306	333	333

Standard errors in parentheses; ***, ** and * indicates statistical significance at 1, 5 and 10%, respectively
m1 and m2 are the first-order and second-order autocorrelation tests and follow N(0,1)

Table 4. Univariate test: Performance measures pre- *versus* post privatization

Performance measure		Small window		Difference POST – PRE (*t*-test, p-*Values*)	Large window		Difference POST – PRE (*t*-test, p-*Values*)
		PRE (-3,-1)	POST(+1, +2)		PRE (-5,-1)	POST(+1, +3)	
RoA	Mean	0.004	0.009	-4.499	0.003	0.009	-7.107
	SD	0.008	0.003	(0.00)***	0.008	0.004	(0.00)***
	Obs.	57	36		93	55	
NIM	Mean	0.033	0.034	-0.538	0.033	0.034	-1.133
	SD	0.009	0.006	(0.59)	0.009	0.006	(0.25)
	Obs.	57	36		93	55	
NPL	Mean	0.123	0.098	2.266 (0.02)**	0.138	0.092	4.868
	SD	0.054	0.048		0.058	0.048	(0.00)***
	Obs.	49	36		72	55	
CAR	Mean	0.094	0.119	-5.686	0.107	0.123	-0.804
	SD	0.029	0.013	(0.00)***	0.174	0.017	(0.42)
	Obs.	53	36		80	55	

Standard errors in parentheses
***, ** and * indicates statistical significance at 1, 5 and 10%, respectively

Table 5. Regression result: analysis of divested banks – small window

	RoA		NIM		NPL		CAR	
LDV	0.449 (0.058)***	0.435 (0.058)***	0.263 (0.052)***	0.248 (0.052)***	0.636 (0.077)***	0.678 (0.118)***	0.184 (0.021)***	0.180 (0.021)***
Year 0	0.0001 (0.004)	0.003 (0.004)	0.003 (0.001)**	0.004 (0.001)***	0.011 (0.007)	0.024 (0.007)***	0.016 (0.008)**	0.019 (0.008)**
PRE (-3,-1)	-0.0009 (0.002)	-0.004 (0.003)	0.001 (0.001)	-0.0006 (0.002)	0.011 (0.008)	0.001 (0.009)	0.001 (0.007)	0.002 (0.008)
POST (+1, +2)	-0.0005 (0.003)	0.009 (0.002)***	0.001 (0.001)	0.002 (0.001)**	0.006 (0.004)	0.010 (0.006)	0.014 (0.006)**	0.014 (0.006)**
PGO4		0.029 (0.015)**		-0.015 (0.007)**		-0.134 (0.036)**		0.034 (0.037)
Controls								
Size	-0.0004 (0.009)	-0.002 (0.009)	-0.016 (0.005)***	-0.017 (0.005)***	0.108 (0.019)***	0.119 (0.041)***	0.079 (0.023)***	0.081 (0.024)***
Fiscal	-0.058 (0.084)	-0.054 (0.083)	-0.332 (0.048)***	-0.332 (0.048)***	0.250 (0.034)***	0.241 (0.035)***	-0.100 (0.035)***	-0.101 (0.036)***
Investment	-0.524 (0.099)***	-0.516 (0.099)***	-0.079 (0.040)***	-0.071 (0.039)*	0.183 (0.027)***	0.180 (0.032)***	-0.129 (0.025)***	-0.122 (0.026)***
Foreign	-0.538 (0.142)***	-0.557 (0.141)***	-0.155 (0.057)***	-0.014 (0.005)***	0.199 (0.024)***	0.111 (0.025)***	-0.164 (0.045)***	-0.166 (0.046)***
m1	-9.57 (0.00)***	-9.38 (0.00)***	-8.42 (0.00)***	-8.06 (0.00)***	-2.78 (0.00)***	-3.09 (0.00)***	-3.92 (0.00)***	-3.88 (0.00)***
m2	1.01 (0.31)	1.00 (0.31)	-0.59 (0.55)	-0.47 (0.63)	-0.47 (0.63)	-0.51 (0.60)	-0.91 (0.77)	-0.97 (0.80)
Sargan test (p-value)	151.73 (0.87)	151.15 (0.88)	186.85 (0.22)	185.78 (0.24)	182.25 (0.20)	181.59 (0.19)	297.01 (0.88)	294.90 (0.89)
Period, banks	1990-2006, 28	1990-2006, 28	1990-2006, 28	1990-2006, 28	1994-2006, 28	1994-2006, 28	1993-2006, 28	1993-2006, 28
N.Obs	414	414	414	414	306	306	333	333
χ^2 test : POST = PRE (*p-Value*)	0.02 (0.89)	1.62 (0.20)	0.12 (0.72)	2.03 (0.15)	0.68 (0.40)	1.75 (0.18)	3.29 (0.06)*	3.35 (0.06)*

Standard errors in parentheses
***, ** and * indicates statistical significance at 1, 5 and 10%, respectively
m1 and m2 are the first-order and second-order autocorrelation tests and follow N(0,1)